

**IN THE CLAIMS**

Claims 1 through 54 are presented herewith of which claims 1 through 15 are original.

No amendments are made to the claims by this Amendment.

1           1. A method for forming and processing a data address mark positioned in a data track  
2 of a magnetic disk preceding a data region in a disk drive to establish synchronization requested  
3 for reading user data from the magnetic disk, said method comprising the steps of:

4           recording of said data address mark in at least two different recording locations of said  
5 data track;

6           when one data address mark recorded in said different recording locations of said data  
7 track is normally detected to establish synchronization requested for reading user data from the  
8 magnetic disk, regarding said one data address mark as an effective data address mark of a  
9 corresponding data region; and

10          skipping a remaining data address mark recorded in said different recording locations  
11 of said data track, when any one data address mark recorded in said different recording locations  
12 is normally detected.

1           2. The method of claim 1, said at least two different recording locations corresponding  
2 to at least a first location and a separately located second location, said data address mark  
3 recorded in said first location being in accordance with a first pattern, and said data address  
4 mark recorded in said second location being in accordance with a second pattern different from  
5 said first pattern.

1           3. (Amended) The method of claim 2, further comprised of each [of] said data address  
2           mark recorded in said different recording locations of said data track being constructed of one  
3           byte of information.

1           4. (Amended) The method of claim 3, further comprised of bits constructing said one  
2           byte being utilized for recording said data address mark and for counting the number of a byte  
3           of said remaining data address mark.

1           5. The method of claim 4, further comprised of said data address mark being detected  
2           by a controller of said disk drive performing a masking function with respect to said data  
3           address mark.

1           6. The method of claim 1, further comprised of said data address mark being detected  
2           by a controller of said disk drive performing a masking function with respect to said data  
3           address mark.

1           7. (Amended) A method for forming and processing a data sector comprising an  
2           identification field and a data field in a magnetic disk of a headerless servo recording system,  
3           comprising the steps of:

4           recording a data address mark, during a recording mode, in at least two different  
5           locations of said data field immediately preceding a data area containing user data;

6           detecting said data address mark recorded in said different locations of said data field,  
7           during a reading mode, to confirm validity of user data contained in said data area following

8 said data address mark;

9 when said data address mark recorded in at least one of said different locations of said  
10 data field is detected, regarding said [one] data address mark detected as an effective data  
11 address mark of a corresponding data area for confirming the validity of user data contained  
12 therein; and

13 skipping a remaining data address mark recorded in said different recording locations  
14 of said data track, when said data address mark recorded in said at least one of said different  
15 recording locations is detected.

1 8. The method of claim 7, said at least two different locations corresponding to at least  
2 a first location and a separately located second location, said data address mark recorded in said  
3 first location being in accordance with a first pattern and said data address mark recorded in said  
4 second location being in accordance with a second pattern different from said first pattern.

1 9. (Amended) The method of claim 7, further comprised of each [of] said data address  
2 mark recorded in said different recording locations of said data field being constructed of one  
3 byte of information.

1 10. The method of claim 7, further comprised of said identification field comprising an  
2 identification preamble, an identification address mark, an identification area for providing said  
3 identification information, a cyclic redundancy code, and an identification postamble.

1 11. A disk drive, comprising: a data recording disk having a plurality of concentric

2 tracks, each track having servo sectors in which servo information for use in positioning a  
3 transducer head is written and succeeding data sectors, each data sector including: an  
4 identification region in which identification information for use to identify the data sector for  
5 reading and writing operations is written; at least two different data address mark regions for  
6 use to indicate a validity of data recorded on said data sector is written; a data region in which  
7 data transferred from an external communication device is written; and an error correction code  
8 region in which an error correction code for use to automatically correct an error is written; said  
9 transducer head for writing data to and reading data from the data sectors of the data recording  
10 disk, and for reading servo position information from the servo sectors of the data recording  
11 disk; means attached to the transducer head for positioning the head across the tracks to perform  
12 said read and write operations; and said transducer head not utilizing a remaining data address  
13 mark recorded in said different recording locations of said data track, when a data address mark  
14 recorded in said two different data address regions is detected.

1 12. The disk drive of claim 11, further comprised of said transducer head detecting data  
2 address marks recorded in at least two different data address mark regions of said data field,  
3 during said reading mode, to confirm validity of user data contained in said data area following  
4 said data address mark, and when at least one data address mark recorded in said two different  
5 data address mark regions of said data field is detected, regarding said one data address mark  
6 as an effective data address mark of a corresponding data area for confirming the validity of user  
7 data contained therein.

1 13. The disk drive of claim 12, said at least two different data address mark regions of

2 said data field corresponding to at least a first region and a separately located second region,  
3 said data address mark recorded in said first region being in accordance with a first pattern and  
4 said data address mark recorded in said second region being in accordance with a second pattern  
5 different from said first pattern.

1 14. The disk drive of claim 11, further comprised of each data address mark recorded  
2 in said two different data address mark regions of said data field being constructed of one byte  
3 of information.

1 15. The disk drive of claim 11, further comprised of said identification field comprising  
2 an identification preamble, an identification address mark, an identification area for providing  
3 said identification information, a cyclic redundancy code, and an identification postamble.

1 16. (Amended) A method of providing a data block preceding a servo information area  
2 in a magnetic recording medium for accessing user data therefrom, comprising:  
3 writing a first data address mark in said data block; and  
4 writing a second data address mark in said data block at a location preceding said servo  
5 information area.

1 17. The method of providing said data block in accordance with claim 16,  
2 wherein said step of writing said first data address mark comprises:  
3 writing a first plurality of bits of a first bit pattern; and  
4 wherein said step of writing said second data address mark comprises:

5       writing a second plurality of bits of a second bit pattern different from said first bit  
6       pattern.

1       18. The method of providing said data block in accordance with claim 17, wherein:  
2       at least one bit of said first plurality of bits represents a first byte count signifying a first  
3       number of bytes to be ignored when said first data address mark is normally read.

1       19. The method of providing said data block in accordance with claim 18, wherein:  
2       at least one bit of said second plurality of bits represents a second byte count signifying  
3       a second number of bytes to be ignored when said second data address mark is normally read.

1       20. (Amended) A magnetic recording medium having a data track having one or more  
2       data blocks preceding a servo information area, comprising:  
3       a first data address mark located before said servo information area in a first data block;  
4       and  
5       a second data address mark located before said servo information area in said first data  
6       block.

1       21. The magnetic recording medium according to claim 20, wherein:  
2       said first data address mark comprises a first plurality of bits of a first bit pattern; and  
3       said second data address mark comprises a second plurality of bits of a second bit pattern  
4       different from said first bit pattern.

1        22. The magnetic recording medium according to claim 21, further comprised of:  
2        at least one bit of said first plurality of bits being a first byte count signifying a first  
3        number of bytes to be ignored when said first data address mark is normally read.

1        23. (Amended) The magnetic recording medium in accordance with claim 22, wherein:  
2        at least one bit of said second plurality of bits represents a second byte count signifying  
3        a second number of bytes to be ignored when said second data address mark is normally read.

1        24. A disk drive device, comprising:  
2        a magnetic recording medium having at least one data block that includes at least a first  
3        data address mark and a second data address mark having no servo information area  
4        therebetween; and  
5        a controller configured to read within said at least one data block at least one of said first  
6        data address mark and said second data address mark.

1        25. The disk drive device according to claim 24, wherein:  
2        said controller is further configured to read a predetermined number of bits from a  
3        successfully read one of said at least first data address mark and said second data address mark,  
4        and to determine a number of bytes to be ignored based on said predetermined number of bits.

1        26. A method for reading a data block preceding a servo information area of a memory  
2        disk, said method comprising the steps of reading at least one of a plurality of data address  
3        marks recorded on said data block at a location before said servo information area.

1        27. The method of claim 26, further comprised of skipping detection of other ones of  
2        said at least two data address marks from subsequent ones of said different recording locations.

1        28. ( Amended) The method of claim 26, wherein recording of said at least two data  
2        address marks comprises:

3        recording a first data address mark at a first one of said plurality of different locations,  
4        said first data address mark comprising a first plurality of bits of a first bit pattern; and  
5        recording a second data address mark at a second one of said plurality of different  
6        locations, said second data address mark comprising a second plurality of bits of a second bit  
7        pattern from said first bit pattern.

1        29. The method of claim 28, wherein:  
2        at least one bit of said first plurality of bits being a first byte count signifying a number  
3        of bytes to be ignored when said first data address mark is normally read at said first one of said  
4        plurality of different locations.

1        30. The method of providing said data block in accordance with claim 29, wherein:  
2        at least one bit of said second plurality of bits represents a second byte count signifying  
3        a second number of bytes to be ignored when said second data address mark is normally read.

1        31. (Amended) A method for preparing a memory disk, comprising:



2       recording a data address mark providing synchronization that enables reading of data  
3       from the memory disk, along a data track on the memory disk at a first location on a first data  
4       block preceding a servo information area; and  
5       recording said data address mark at a second location on said first data block preceding  
6       said servo information area.

1       32. (Amended) A disk drive device, comprising:  
2       a head positioned to read, within at least one of a plurality of data blocks of a recording  
3       medium, a first data address mark, and a second data address mark, said first data address mark  
4       and said second data address mark having no servo information therebetween; and  
5       a controller regulating movement of said head based on at least one of said first data  
6       address mark and said second data address mark.

1       33. The device of claim 32, wherein:  
2       said head reading within said first data address mark, an indication of a number of bytes  
3       to be ignored within said data block subsequent to successfully reading of said first data address  
4       mark.

1       34. The device of claim 32, wherein:  
2       said controller is further configured to read a predetermined number of bits from a  
3       successfully read one of said first data address mark and said second data address mark, and to  
4       determine a number of bytes to be ignored based on said predetermined number of bits.

1        35. A method of providing a data block preceding a servo information area in a  
2 magnetic recording medium for accessing user data therefrom, comprising:  
3        writing a first data address mark in said data block; and  
4        writing in said data block at a location preceding said servo information area, a second  
5 data address mark that is distinguishable from said first data address mark.

1        36. A method of providing a data block preceding a servo information area in a  
2 magnetic recording medium for accessing user data therefrom, comprising:  
3        writing a first data address mark in said data block; and  
4        writing a second data address mark exhibiting a different bit pattern in said data  
5 block at a location preceding said servo information area.

1        37. A method of providing a data block preceding a servo information area in a  
2 magnetic recording medium for accessing user data therefrom, comprising:  
3        writing in said data block a first data address mark marking said data block; and  
4        writing in said data block at a location preceding said servo information area, a second  
5 data address mark separately marking said data block.

1        38. A magnetic recording medium having a data track having one or more data blocks  
2 preceding a servo information area, comprising:  
3        a first data address mark located before said servo information area in a first data block;  
4 and  
5        a second data address mark distinguishable from said first data address mark, located

6 before said servo information area in said first data block.

1 39. A magnetic recording medium having a data track having one or more data blocks  
2 preceding a servo information area, comprising:

3 a first data address mark located before said servo information area in a first data block;

4 and

5 a second data address mark exhibiting a different bit pattern, located before said servo  
6 information area in said first data block.

1 40. A magnetic recording medium having a data track having one or more data blocks  
2 preceding a servo information area, comprising:

3 a first data address mark located before said servo information area in a first data block;

4 and

5 a second data address mark separately marking said data block, located before said servo  
6 information area in said first data block.

1 41. A disk drive device, comprising:

2 a magnetic recording medium having at least one data block that includes at least a first  
3 data address mark and a second data address mark distinguishable from said first data address  
4 mark and having no servo information area between said first data address mark and said second  
5 data address mark; and

6 a controller configured to distinguish within said at least one data block, between said  
7 first data address mark and said second data address mark.

1       42. A disk drive device, comprising:

2       a magnetic recording medium having at least one data block that includes at least a first  
3 data address mark and a second data address mark exhibiting a different bit pattern, with no  
4 servo information area between said first data address mark and said second data address mark;  
5 and  
6       a controller configured to read within said at least one data block at least one of said first  
7 data address mark and said second data address mark.

1       43. (Amended) A disk drive device, comprising:

2       a magnetic recording medium having at least one data block that includes at least a first  
3 data address mark and a second data address mark separately marking said data block, with no  
4 servo information area between said first data address mark and said second data address mark;  
5 and  
6       a controller configured to read within said at least one data block at least one of said first  
7 data address mark and said second data address mark.

1       44. A method for reading a data block preceding a servo information area of a memory  
2 disk, said method comprising the steps of reading at least one of a plurality of data address  
3 marks that are mutually distinguishably on the memory disk at a location before said servo  
4 information area.

1       45. A method for reading a data block preceding a servo information area of a memory

2 disk, said method comprising the steps of reading at least one of a plurality of data address  
3 marks exhibiting different bit patterns on the memory disk at a location before said servo  
4 information area.

1 46. A method for reading a data block preceding a servo information area of a memory  
2 disk, said method comprising the steps of reading at least one of a plurality of data address  
3 marks that separately mark said data block on the memory disk at a location before said servo  
4 information area.

1 47. A method for preparing a memory disk, comprising:  
2 recording a first data address mark providing synchronization that enables reading of  
3 data from the memory disk, along a data track on the memory disk at a first location on a first  
4 data block preceding a servo information area; and  
5 recording a second data address mark that is distinguishable from said first data address  
6 mark at a second location on said first data block preceding said servo information area.

1 48. A method for preparing a memory disk, comprising:  
2 recording a first data address mark providing synchronization that enables reading of  
3 data from the memory disk, along a data track on the memory disk at a first location on a first  
4 data block preceding a servo information area; and  
5 recording a second data address mark exhibiting a different bit pattern, at a second  
6 location on said first data block preceding said servo information area.

1       49. A method for preparing a memory disk, comprising:  
2       recording a data address mark providing synchronization that enables reading of data  
3       from the memory disk, along a data track on the memory disk at a first location on a first data  
4       block preceding a servo information area; and  
5       recording said data address mark to separately mark said data block at a second location  
6       on said first data block preceding said servo information area.

1       50. A disk drive device, comprising:  
2       a head positioned to read, within at least one data block of a recording medium, a first  
3       data address mark, and a second data address mark that is distinguishable from said first data  
4       address mark; and  
5       a controller regulating movement of said head based on at least one of said first data  
6       address mark and said second data address mark.

1       51. A disk drive device, comprising:  
2       a head positioned to read, within at least one data block of a recording medium, a first  
3       data address mark, and a second data address mark separately marking said data block; and  
4       a controller regulating movement of said head based on at least one of said first data  
5       address mark and said second data address mark.

1       52. A disk drive device, comprising:  
2       a head positioned to read, within at least one data block written in headerless servo  
3       recording format on a recording medium, a first data address mark, and a second data address

4 mark separately marking said data block; and  
5 a controller regulating movement of said head based on at least one of said first data  
6 address mark and said second data address mark.

1 53. A method of providing a data block recording medium for accessing user data  
2 therefrom, comprising:

3 writing within at least one data block written in a headerless servo recording format on  
4 said recording medium, a first data address mark marking said data block; and writing in said  
5 data block, a second data address mark separately marking said data block.

1 54. A method of providing a data block in a recording medium for accessing user data  
2 therefrom, comprising:

3 writing in said data block a first data address mark marking said data block; and  
4 writing in said data block a second data address mark separately marking said data block.